

What is Claimed is:

1. An ink jettable, radiation curable ink jet ink composition, comprising:
 - (a) an oligo/resin component;
 - (b) a radiation curable, reactive diluent comprising
 - (i) 0.1 to 50 weight percent of an adhesion promoting, radiation curable component comprising one or more heterocyclic, radiation curable monomer and/or an alkoxyated monomer comprising pendant alkoxyated functionality and no main chain alkoxyated functionality and
 - (ii) no more than about 10 weight percent of an optional alkoxyated, radiation curable monomer comprising main-chain alkoxyated functionality.
2. The ink composition of claim 1, wherein the oligo/resin component is aliphatic.
3. The ink composition of claim 1, wherein the oligo/resin component comprises an oligo/resin selected from the group consisting of an aliphatic polyester oligo/resin, an aliphatic polyurethane oligo/resin, and an aliphatic acrylic oligo/resin.
4. The composition of claim 1, wherein the adhesion promoting component comprises 2-(2-ethoxyethoxy)ethyl (meth)acrylate, tetrahydrofurfuryl (meth)acrylate, or combinations thereof.
5. The composition of claim 4, wherein the adhesion promoting component comprises 2-(2-ethoxyethoxy)ethyl (meth)acrylate.
6. The composition of claim 4, wherein the adhesion promoting component comprises tetrahydrofurfuryl (meth)acrylate.
7. The composition of claim 1, wherein the adhesion promoting component comprises N-vinylcaprolactam.

15. The ink jettable fluid composition of claim 14, wherein the high Tg component comprises a monomer, said monomer comprising at least one radiation curable moiety and at least one nonaromatic, cyclic moiety.

5 16. The ink jettable composition of claim 14, wherein the high Tg component comprises isobornyl (meth)acrylate.

17. The ink jettable composition of claim 8, wherein the multifunctional monomer comprises hexanediol di(meth)acrylate.

10 18. The ink jettable composition of claim 14, wherein the adhesion promoting component comprises a monomer having an adhesion score after curing of at least 50 according to ASTM D 3359-95A, Method B on at least one substrate chosen from the group consisting of polymethyl methacrylate, polyvinyl chloride, and polyethylene terephthalate.

15 19. The ink jettable composition of claim 14, wherein the adhesion promoting component comprises a monomer, said monomer comprising at least one radiation curable moiety and pendant alkoxylated functionality.

20 20. The ink jettable composition of claim 14 wherein the adhesion promoting component comprises 2-(2-ethoxyethoxy)ethyl (meth)acrylate.

25 21. The ink jettable composition of claim 14, wherein the adhesion promoting component comprises a monomer, said monomer comprising at least one radiation curable moiety and at least one heterocyclic moiety.

30 22. The ink jettable composition of claim 21, wherein said monomer is tetrahydrofurfuryl (meth)acrylate.

23. The composition of claim 14, wherein the adhesion promoting component comprises N-vinylcaprolactam.

24. The composition of claim 14, wherein the adhesion promoting component comprises propoxyethyl (meth)acrylate.

25. The composition of claim 14, wherein the adhesion promoting component comprises propoxylated neopentyl glycol di(meth)acrylate.

26. The ink jettable composition of claim 26, wherein the adhesion promoting component comprises 1 to 10 parts by weight of a first monomer comprising at least one radiation curable moiety and pendant alkoxyated functionality per 5 to 15 parts by weight of a second monomer comprising at least one radiation curable moiety and at least one heterocyclic moiety.

27. The ink jettable composition of claim 19, wherein the first monomer is 2-(2-ethoxyethoxy)ethyl (meth)acrylate and the second monomer is tetrahydrofurfuryl (meth)acrylate.

28. A radiation curable, ink jettable fluid composition, comprising:

- (a) an oligo/resin component; and
- (b) a radiation curable reactive diluent, wherein the reactive diluent comprises an adhesion promoting component, said adhesion promoting component comprising an alkoxyated, radiation curable monomer and a radiation curable monomer comprising a heterocyclic moiety.

29. The ink composition of claim 21, wherein the oligo/resin component is aliphatic.

30. The ink composition of claim 21, wherein the oligo/resin component comprises an oligo/resin selected from the group consisting of an aliphatic polyester oligo/resin, an aliphatic polyurethane oligo/resin, and an aliphatic acrylic oligo/resin.

31. The ink jettable fluid composition of claim 21, wherein the composition is substantially free of solvent.

32. The ink jettable composition of claim 21, wherein the adhesion promoting component comprises 1 to 10 parts by weight of a first monomer comprising at least one radiation curable moiety and at least one alkoxy or polyalkoxy moiety per 5 to 15 parts by weight of a second monomer comprising at least one radiation curable moiety and at least one heterocyclic moiety.

33. The ink jettable composition of claim 21, wherein the first monomer is 2-(2-ethoxyethoxy)ethyl (meth)acrylate and the second monomer is tetrahydrofurfuryl (meth)acrylate.

34. A radiation curable, ink jettable fluid composition, comprising:

- (a) an oligo/resin component; and
- (b) a radiation curable reactive diluent, wherein the reactive diluent comprises an adhesion promoting component, a high Tg component, a low surface tension component comprising a radiation curable monomer having a hydrocarbyl moiety containing 2 to 20 carbon atoms, and a multifunctional monomer having a plurality of radiation curable moieties.

35. The radiation curable, ink jettable fluid composition of claim 34, wherein the oligo/resin component is aliphatic.

36. The radiation curable, ink jettable fluid composition of claim 34, wherein the oligo/resin component comprises an oligo/resin selected from the group consisting of an aliphatic polyester oligo/resin, an aliphatic polyurethane oligo/resin, and an aliphatic acrylic oligo/resin.

37. The ink jettable fluid composition of claim 34, wherein the composition is substantially free of solvent.

38. The ink jettable fluid composition of claim 34, wherein the reactive diluent comprises 0.5 to 50 weight percent of the high Tg component, 0.5 to 70 weight percent of the adhesion promoting component, and 0.5 to 50 weight percent of the one multifunctional monomer having a plurality of radiation curable moieties

39. The ink jettable fluid composition of claim 38, wherein the high Tg component comprises a monomer, said monomer comprising at least one radiation curable moiety and at least one nonaromatic, cyclic moiety.

40. The ink jettable composition of claim 38, wherein the high Tg component comprises isobornyl (meth)acrylate.

41. The ink jettable composition of claim 34, wherein the multifunctional monomer comprises 1,6-hexanediol di(meth)acrylate.

42. The ink jettable composition of claim 38, wherein the adhesion promoting component comprises a monomer having an adhesion score after curing of at least 50 according to ASTM D 3359-95A, Method B on at least one substrate chosen from the group consisting of polymethyl methacrylate, polyvinyl chloride, and polyethylene terephthalate.

43. The ink jettable composition of claim 38, wherein the adhesion promoting component comprises a monomer, said monomer comprising at least one radiation curable moiety and one or more alkoxy or polyalkoxy moieties.

44. The ink jettable composition of claim 38, wherein the adhesion promoting component comprises 2-(2-ethoxyethoxy)ethyl (meth)acrylate.

45. The ink jettable composition of claim 38, wherein the adhesion promoting component comprises a monomer, said monomer comprising at least one radiation curable moiety and at least one heterocyclic moiety.

5 46. The ink jettable composition of claim 45, wherein said monomer is tetrahydrofurfuryl (meth)acrylate.

47. The ink jettable composition of claim 38, wherein the adhesion promoting component comprises 1 to 10 parts by weight of a first monomer comprising at least one radiation curable moiety and at least one alkoxy or polyalkoxy moiety per 5 to 15 parts by weight of a second monomer comprising at least one radiation curable moiety and at least one heterocyclic moiety.

48. The ink jettable composition of claim 47, wherein the first monomer is 2-(2-ethoxyethoxy)ethyl (meth)acrylate and the second monomer is tetrahydrofurfuryl (meth)acrylate.

49. The composition of claim 38, wherein the adhesion promoting component comprises N-vinyl caprolactam.

50. The composition of claim 38, wherein the adhesion promoting component comprises propoxy ethyl (meth)acrylate.

51. The composition of claim 38, wherein the adhesion promoting component comprises propoxylated neopentyl glycol di(meth)acrylate.

52. The ink jettable composition of claim 34, wherein the low surface tension component comprises a monomer comprising at least one radiation curable moiety and a branched hydrocarbyl moiety containing 3 to 20 carbon atoms.

53. The ink jettable composition of claim 34, wherein the low surface tension component comprises a branched alkyl (meth)acrylate.

54. The ink jettable composition of claim 53, wherein said branched alkyl (meth)acrylate is isooctyl (meth)acrylate.

5 55. The radiation curable, ink jettable fluid composition of claim 34, further comprising a radiation curable gloss component.

10 56. The radiation curable, ink jettable fluid composition of claim 55, wherein the gloss component comprises a radiation curable monomer that is a solid at room temperature.

57. The radiation curable, ink jettable fluid composition of claim 55, wherein the gloss component comprises N-vinyl pyrrolidinone.

15 58. A radiation curable ink composition, comprising:
an oligo/resin component;
a radiation curable, reactive diluent; and
wherein the ink composition is substantially free of solvent and has at least about 50 percent elongation in a cured state, an ink jettable viscosity in an uncured state, and wherein the ink composition is at least a substantially Newtonian fluid in the uncured state.
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59. The ink composition of claim 58, further comprising a colorant.

25 60. The ink composition of claim 58, wherein the composition is substantially free of colorant.

30 61. A radiation curable ink composition that has an ink jettable viscosity in an uncured state and at least about 50 percent elongation in a cured state, wherein the ink composition comprises an oligo/resin component selected from the group consisting of an

aliphatic polyester oligo/resin, an aliphatic polyurethane oligo/resin, and an aliphatic acrylic oligo/resin.

5 62. The composition of claim 61, wherein the composition is substantially free of solvent.

 63. A radiation curable ink jettable composition comprising tetrahydroturturyl (meth)acrylate.

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